IN THE CLAIMS

1. **(currently amended)** A traffic engineering method of a network divided into a plurality of areas, each area including a plurality of nodes, said method comprising the steps of:

carrying out a load-balancing process at a boundary node in said each area in a closed manner;

calculating a normalized value used for the load-balancing process, based on address information of a packet supplied to an ingress node of the network from an outside of the network;

adding said normalized value to switching information of said packet;

forwarding said packet from said ingress node to the plurality of nodes;

receiving said packet from said ingress node at an area boundary node located on a boundary of the plurality of areas;

extracting said normalized value, used for carrying out the load-balancing process in an area including said area boundary node, from the switching information of said packet;

redistributing a traffic flow from a failed route to a route other than the failed route if receiving a failure notification at said ingress node or said area boundary node; ~~and~~

deciding whether a traffic loss occurs by redistributing the traffic flow from said failed route to the route other than said failed route; and

setting a new route and switching the traffic flow to the new route when it is decided at said deciding step that the traffic loss occurs by redistributing the traffic flow from said failed route to the route other than said failed route.

2. (original) The traffic engineering method as claimed in claim 1, further comprising the step of deciding a destination of a packet in said each area.

3. – 4. (canceled)

5. (original) The traffic engineering method as claimed in claim 1, further comprising the step of notifying a closest node apparatus that carries out the load-balancing process and is the closest to said node apparatus on an upstream side of said node apparatus, about a failure if detecting the failure.

6. – 8. **(canceled)**

9. **(currently amended)** A node apparatus included in a network that is divided into a plurality of areas and located at a boundary of one of the plurality of areas, in which an entire network resource is optimized by traffic engineering by deciding a destination of a packet in each area, the node apparatus comprising:

a load balancing unit configured to use said destination for carrying out a load-balancing process within said each area in a closed manner;

a normalized-value extracting unit, which extracts a normalized value, used for carrying out the load-balancing process in an area including said node apparatus, from switching information of a packet supplied from an adjacent area;

a traffic distributing unit that redistributes a traffic flow from a failed route to a route other than the failed route if receiving a failure notification; and

a failure-notification receiving unit that decides whether a traffic loss occurs by redistributing the traffic flow from said failed route to the route other than said failed route, wherein

said traffic distributing unit switches the traffic flow from said failed route to a newly set route when said failure-notification receiving unit decides that the traffic loss occurs by redistributing the traffic flow from said failed route to the route other than said failed route.

10. (original) The node apparatus as claimed in claim 9, wherein said node apparatus corresponding to an ingress node supplied with the packet from an outside of the network includes a normalized-value calculating unit that calculates a normalized value used for the load-balancing process based on address information of said packet, and a switching-information creating unit that adds said normalized value to switching information of said packet.

11. (canceled)

12. (original) The node apparatus as claimed in claim 9, further comprising a failure notifying unit that notifies a closest node apparatus that carries out the load-balancing process and is the closest to said node apparatus on an upstream side of said node apparatus, about a failure if detecting said failure.

13. – 18. **(canceled)**

19. **(currently amended)** A network system, comprising:

a plurality of areas, each area including a plurality of nodes, wherein

an entire network resource is optimized by traffic engineering,

a load-balancing process is carried out at a boundary node in said each area in a closed manner,

a normalized value, used for the load-balancing process, is calculated based on address information of a packet supplied to an ingress node of the network from an outside of the network;

said normalized value is added to switching information of said packet;

said packet is forwarded from said ingress node to the plurality of nodes;

said packet is received from said ingress node at an area boundary node located on a boundary of the plurality of areas;

said normalized value is extracted, for carrying out the load-balancing process in an area including said boundary node, from switching information of the packet;

a traffic flow is redistributed from a failed route to a route other than the failed route if receiving a failure notification at said ingress node or said area boundary node, ~~and~~

a decision is made on whether a traffic loss occurs by redistributing the traffic flow from said failed route to the route other than said failed route; and

a new route is set and the traffic flow is switched to the new route when the decision is made that the traffic loss occurs by redistributing the traffic flow from said failed route to the route other than said failed route.

20. **(currently amended)** A traffic engineering method in a network, comprising:

dividing said network into a plurality of areas, each area including a plurality of nodes comprising an edge node and at least one boundary node; and

carrying out a load-balancing process at said boundary node in said each area independently;

calculating a normalized value used for the load-balancing process, based on address information of a packet supplied to an ingress node of the network from an outside of the network;

adding said normalized value to switching information of said packet;

forwarding said packet from said ingress node to the plurality of nodes;

receiving said packet from said ingress node at an area boundary node located on a boundary of the plurality of areas;

extracting said normalized value, used for carrying out the load-balancing process in an area including said area boundary node, from the switching information of said packet;

redistributing a traffic flow from a failed route to a route other than the failed route if receiving a failure notification at said ingress node or said area boundary node; ~~and~~

deciding whether a traffic loss occurs by redistributing the traffic flow from said failed route to the route other than said failed route; and

setting a new route and switching the traffic flow to the new route when it is decided at said deciding step that the traffic loss occurs by redistributing the traffic flow from said failed route to the route other than said failed route.